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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/323,692	06/02/1999	SHUNPEI YAMAZAKI	0756-0980	9526

31780 7590 08/25/2003

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EXAMINER

LEE, EUGENE

ART UNIT PAPER NUMBER

2815

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/323,692

Applicant(s)

YAMAZAKI ET AL.

Examiner

Eugene Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-80 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-80 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 07/673,458.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/18/03 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1 thru 80 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

It is unclear how a semiconductor layer exhibiting a peak of Raman spectra, displaced from a peak of single crystalline silicon to the lower frequency direction can have substantially no grain boundaries. A semiconductor layer of this type (as described on page 14 of the applicant's specification) is a polycrystalline film. However, polycrystalline films have grain boundaries (as opposed to single crystalline silicon) due to their non-uniform nature.

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4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1 thru 80 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term “substantially” in claims 1-80 is a relative term whose metes and bounds are not adequately defined by the applicant’s disclosure. The term “substantially” is not defined in the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Insofar as definite, claims 1 thru 27, 30 thru 40, 43 thru 53, and 56 thru 76 are rejected under 35 U.S.C. 102(e) as being anticipated by Sumiyoshi et al. ‘134A. Sumiyoshi discloses (see figures 1 and 2) an electro-optical device comprising a substrate 101; a thin film transistor comprising a polysilicon semiconductor layer (source, drain, and channel regions); gate

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insulation film 105, insulation film 107, contacts (conductive film) 108, 109, insulation flattening film (organic resin film) 110, and display electrode (pixel electrode) 111.

It was inherent that the polysilicon semiconductor layer exhibits a peak of Raman spectra, displaced from a peak of single crystalline silicon to the lower frequency direction since less crystalline structures have a more disorganized structure and therefore a lower peak than single crystalline silicon. Also, see *Prior Art* paragraph below.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Insofar as definite, claims 28, 29, 41, 42, 54, 55, 77 thru 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiyoshi et al. '134A. Sumiyoshi does not disclose the semiconductor layer having an electron mobility of 15 to 300 cm<sup>2</sup>/Vsec, hole mobility of 10 to 200 cm<sup>2</sup>/Vsec, or hole mobility of 10 to 200 cm<sup>2</sup>/Vsec. However, it was well known in the art at the time of invention that these ranges were typical ranges that electrons and holes moved in a properly functioning channel of a semiconductor device. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have these ranges for the electron mobility and hole mobility of Sumiyoshi's invention since these mobilities provide a functional current in a semiconductor device. It has been held that where the general conditions

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of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

### ***Prior Art***

10. The prior art of made of record and not relied upon is considered pertinent to applicant's disclosure. See, for example, Iijima et al. '308 (see, for example, FIG. 7) where it shows how a Raman peak of a less crystalline material keeps shifting towards a lower frequency direction, due to the material's more disorganized structure.

### ***Response to Arguments***

11. Applicant's arguments with respect to claims 1-80 have been considered but are moot in view of the new ground(s) of rejection.

The limitation "semiconductor layer has substantially no grain boundaries" does not definitely state a semiconductor film without grain boundaries. Therefore, because of the inclusion of the term "substantially", Sumiyoshi still discloses a "semiconductor layer having substantially no grain boundaries."

Also, regarding the applicant's argument on page 4 that the Examiner has ignored the teachings of the specification, this is not persuasive since it is the claims that define the claimed invention, and NOT the specification that are anticipated or patentable. Therefore, "the energy bands of clusters are connected through Si-Si bonds anchoring the clusters at interfaces therebetween" that is stated in the specification can not be read into the claim.

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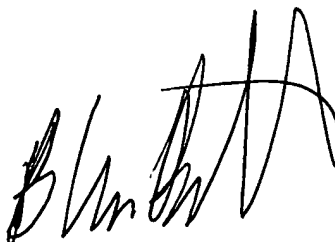
### INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 703-305-5695. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 703-308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Eugene Lee  
August 17, 2003

A handwritten signature in black ink, appearing to read 'B. William Baumeister', with a large, stylized flourish at the end.

**B. WILLIAM BAUMEISTER**  
**PRIMARY EXAMINER**